

REMARKS

Claims 76-83 are pending in this application. Claims 76, 77, 80, 81 and 83 have been amended. No new matter has been introduced. The specification has been amended to correct typographical errors.

A proposed drawing amendment for Figures 1-3 is submitted for the Examiner's approval. Figures 1-3 are labeled "Prior Art."

Claims 76, 77, 80, 81 and 83 stand rejected under 35 U.S.C. §112, second paragraph, as being "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." (Office Action at 3). Specifically, the Office Action asserts that "[C]laims 76, 77, 80, 81 and 83 contain[s] the trademark/tradenames SILK, and NANOGLASS." (Office Action at 3). Applicant notes that claims 76, 77, 80, 81 and 83 have been amended to clarify and identify the properties of the SILK and NANOGLASS materials. Applicant notes that all pending claims are now in condition for allowance.

Claims 76-80, 82 and 83 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hasegawa et al. (U.S. Patent No. 6,593,246) ("Hasegawa"). This rejection is respectfully traversed.

The claimed invention relates to an "integrated circuit structure." As such, amended independent claim 76 recites an "integrated circuit structure" comprising *inter alia* "a first insulating layer comprising SILK material with a dielectric constant of about 2.65 at 100 kHz provided over a semiconductor substrate and contacting at least a portion of a metal layer provided within said semiconductor substrate, said first insulating layer having a thickness of about 4,000 Angstroms to about 30,000

Angstroms.” Amended independent claim 76 also recites “a second insulating layer comprising NANOGLOSS material with a dielectric constant of about 3.5 at 100 kHz provided over said first insulating layer, said second insulating layer having a thickness of about 100 Angstroms to about 2,000 Angstroms.” Amended independent claim 76 further recites “at least a first opening within said first and second insulating layers, said first opening being formed by time etching of at least one of said first and second insulating layers with a first etch chemistry.”

Hasegawa discloses a “process for producing a semiconductor device comprising an inter level dielectric containing a xerogel film or a fluorine resin film.” (Abstract). The process of Hasegawa comprises “a step of forming, on the inter level dielectric comprising a lower layer of the inter level dielectric formed with an organic film and an upper layer of the inter level dielectric formed with a xerogel film or a fluorine resin film, a first mask to be an etching mask for forming a via contact hole by etching the inter level dielectric.” (Abstract). The process of Hasegawa further comprises “a step of forming, on the first mask, a second mask, which comprises a different material from the first mask, to be an etching mask for forming a wiring groove by etching the inter level dielectric.” (Abstract).

Hasegawa does not disclose, teach or suggest the limitations of amended independent claim 76. Hasegawa fails to disclose, teach or suggest “a first insulating layer comprising SILK material . . . having a thickness of about 4,000 Angstroms to about 30,000 Angstroms” and “a second insulating layer comprising NANOGLOSS material . . . having a thickness of about 100 Angstroms to about 2,000 Angstroms,” as amended independent claim 76 recites. Hasegawa teaches that the second film 14 having a low dielectric constant (which would arguably correspond to the “second insulating layer comprising NANOGLOSS material” of the claimed invention) has a thickness of 400 nm (which is 4,000 Angstroms) and not “about 100 Angstroms to about

2,000 Angstroms," as in the claimed invention. For at least these reasons, Hasegawa fails to anticipate the subject matter of claims 76-80, 82 and 83, and withdrawal of the rejection of these claims is respectfully requested.

Claim 81 stands rejected under 35 U.S.C. § 103 as being unpatentable over Hasegawa in view of Baklanov et al. (U.S. Patent No. 6,593,251) ("Baklanov"). This rejection is respectfully traversed.

Claim 81 depends on amended independent claim 76 and recites that the fourth insulating layer "comprises SILK material with a dielectric constant of about 2.65 at 100 kHz" and that the third insulating layer "comprises NANOGLASS material with a dielectric constant of about 3.5 at 100 kHz."

Baklanov relates to "a method to produce a porous oxygen-silicon insulating layer comprising following steps: applying a silicon oxygen layer to a substrate exposing the said substrate to a HF ambient." (Abstract).

The subject matter of claim 81 would not have been obvious over Hasegawa in view of Baklanov. Specifically, the Office Action fails to establish a *prima facie* case of obviousness. Courts have generally recognized that a showing of a *prima facie* case of obviousness necessitates three requirements: (i) some suggestion or motivation, either in the references themselves or in the knowledge of a person of ordinary skill in the art, to modify the reference or combine the reference teachings; (ii) a reasonable expectation of success; and (iii) the prior art references must teach or suggest all claim limitations. See e.g., In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Rouffet, 149 F.3d 1350, 1355 (Fed. Cir. 1998); Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573 (Fed. Cir. 1996).

First, not all limitations of amended independent claim 76 are disclosed, taught or suggested by the prior art references, whether considered alone or in combination. None of Hasegawa and Baklanov, considered alone or in combination, discloses, teaches or suggests an "integrated circuit structure" comprising "a first insulating layer comprising SILK material with a dielectric constant of about 2.65 at 100 kHz . . . having a thickness of about 4,000 Angstroms to about 30,000 Angstroms" and "a second insulating layer comprising NANOGLASS material with a dielectric constant of about 3.5 at 100 kHz . . . having a thickness of about 100 Angstroms to about 2,000 Angstroms," much less a third and fourth insulating layers provided over the first and second insulating layers so that the fourth insulating layer "comprises SILK material with a dielectric constant of about 2.65 at 100 kHz" and the third insulating layer "comprises NANOGLASS material with a dielectric constant of about 3.5 at 100 kHz," as in the claimed invention.

As noted above, Hasegawa is silent about all limitations of amended independent claim 76. In addition, Hasegawa fails to disclose, teach or suggest an integrated circuit structure having a third and fourth insulating layers provided over a first and second insulating layers, as in the claimed invention. Further, Baklanov is silent about an "integrated circuit structure" having a plurality of insulating layers which are selected based on the compatibility of specific materials having specific thicknesses. Baklanov is silent about "a first insulating layer comprising SILK material with a dielectric constant of about 2.65 at 100 kHz . . . having a thickness of about 4,000 Angstroms to about 30,000 Angstroms" and "a second insulating layer comprising NANOGLASS material with a dielectric constant of about 3.5 at 100 kHz . . . having a thickness of about 100 Angstroms to about 2,000 Angstroms," much less about a third and fourth insulating layers provided over the first and second insulating layers so that the fourth insulating layer "comprises SILK material with a dielectric constant of about

2.65 at 100 kHz" and the third insulating layer "comprises NANOGLOSS material with a dielectric constant of about 3.5 at 100 kHz," as in the claimed invention.

Second, a person of ordinary skill in the art would not have been motivated to combine the teachings of Hasegawa with those of Baklanov to arrive at the claimed invention. As noted above, the crux of Hasegawa is the formation of "a xerogel or a fluorine resin in an inter level dielectric to decrease a wiring capacitance." (Abstract). Hasegawa also teaches a first and second mask layers having different materials that form an etching mask. On the other hand, the crux of Baklanov is "to increase the porosity of the CVD Silicon-oxygen film under soft physical and chemical conditions to avoid any change of the chemical composition and of the material properties." (Col. 1, lines 56-58). In this manner, "[t]hese physical and chemical conditions are compatible with the substrates and the layers formed thereon." (Col. 1, lines 58-60). Accordingly, one skilled in the art would not have been motivated to combine these disparate references and, for at least these reasons, the Office Action fails to establish a *prima facie* case of obviousness. Withdrawal of the rejection of claim 81 is respectfully requested.

Allowance of the application is respectfully solicited.

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Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes a request for labeling Figures 1-3 as
“Prior Art” for Examiner’s approval.

Attachment: Replacement sheet
 Annotated sheet showing changes